The CHEMIST

October, 1961

Dr. Hans B. Jonassen, F.A.I.C., (right) accepting Honor Scroll of Louisiana AIC Chapter from Mack Stansbury, Chapter Chairman. Dr. H. E. Langenecker, F.A.I.C., President of Tulane University, is at left.

(See page 367)

Volume XXXVIII

AMERICAN INSTITUTE OF CHEMISTS

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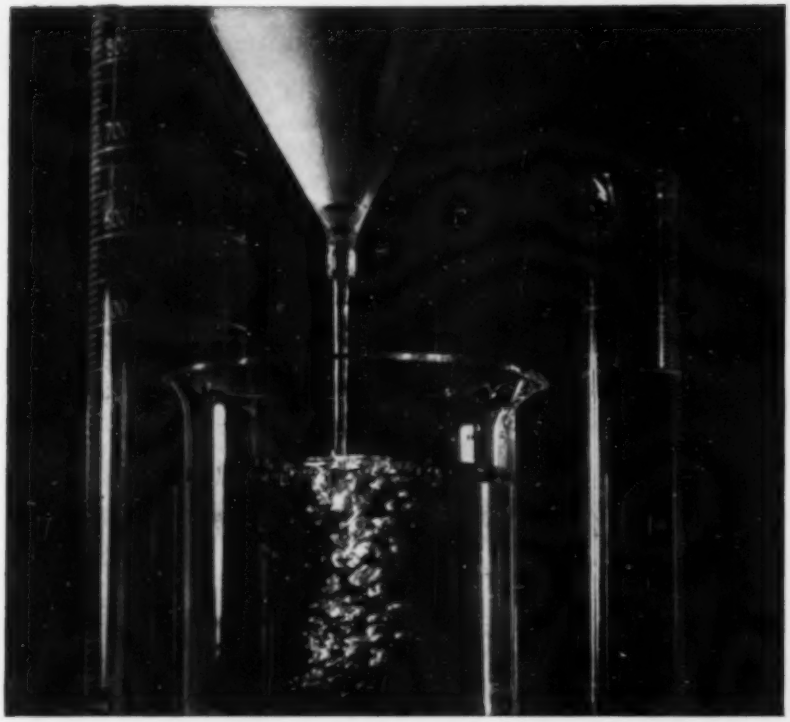

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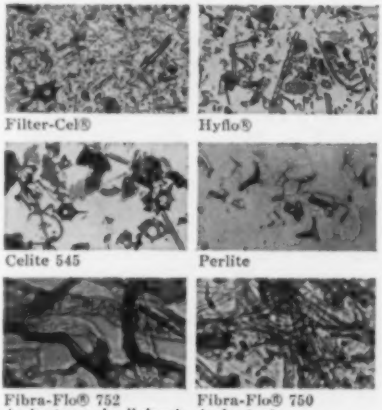

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Deadlines for THE CHEMIST: For the November issue the deadline is October 15.

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To Come in November

"Changing Science Patterns in the 1960's" is a timely paper by Samuel Schenberg, F.A.I.C., director of science of the New York City Schools. He and Dr. Alvan H. Tenney of Union Carbide Chemicals Co. were jointly honored by the New York AIC Chapter for their contributions to science education. . . . "The Imbroglio of Academic Research" by Dr. Jack P. Montgomery, Hon. AIC, covers the problem faced by universities receiving Federal research funds. . . . "How to Lose Money on Creative Thinking" is the article that needed to be written. It is by Dr. Johan Bjorksten, AIC president. . . . "Our Atomic Future," by Dr. Willard F. Libby, Nobel Laureate, was presented at a meeting of the Western AIC Chapter. Pertinent excerpts will be used from it in this and future issues.

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The Explosion Age

(An editorial by A. Q. Mowbray, reprinted with permission from *Materials Research & Standards*, Vol. 1, No. 8, Aug. 1961).

> . . . *"Now here, you see, it takes all the running you can do, to keep in the same place."*
> —Through the Looking Glass

THE suspicion grows that, at some time during the past decade or two, mankind followed Alice through the looking glass and now finds himself in a world where it takes all the running he can do to keep in the same place.

It used to be that a man could wake every morning of his life knowing, at least, what Age he lived in. Nowadays he had better check his morning paper first. As Glenn Seaborg (Hon. AIC) said recently, "We have compressed centuries of environmental evolution into the past two decades . . . Ages tumble upon one another so rapidly that only future historians can untangle them." What Age are we in now? Electronic? Atomic? Space? Thermonuclear? Automation?

Perhaps the best term is the Explosion Age. We are beset on every side by explosions—from population to thermonuclear. Everything is rocketing upward on an exponential curve. World crises pile in upon us—we now have two or three on the fire at once. It almost makes one long for the good old days of the thirties, when there was a decent interval of months between threats to our civilization. Even the day of the leisurely war, it seems, is past. One visualizes the big one to come as being settled in a matter of days, instead of years.

We are told that we must get to the moon with all haste. Even the war to the death in which Western civilization reluctantly finds itself is called a "race." We are told that whole continents of feudal societies must be wrenched from the Middle Ages to the 20th century in the space of a few years. The new nations of Africa are struggling to compress millennia of Western evolution into less than one generation. The flint and the spear are to be quickly exchanged for the turret lathe and the nuclear warhead.

The catalyst in all this is, of course, the rise of modern science and the unfettered exploitation of scientific research. And one "unhappy harvest" of this fact, again according to Glenn Seaborg, is the "strange notions of those who hold that science is going too fast; that the clock should be stopped or even turned back." Dr. Seaborg rightfully points out that this cannot be done. "Once man dared to question the untested natural laws

that ruled him, there was and is no running from the unrelenting pursuit of truth."

Granting this, one still feels the threat to one's identity as an individual human being. To the all-powerful troika of Big Business, Big Labor, and Big Government, we must add Big Science. In the shadow of these monoliths, we are in danger of forgetting that the world was not made for any of these, or for organizations at all; it was made for man. And the only place where this idea can be preserved is in the mind and consciousness of each man. This may be our heaviest responsibility in the trying period ahead—to keep alive, each as an individual member of the race, the inspiring and still revolutionary idea that the world exists for man.

Special AIC Announcements

The Committee on Honorary Membership Requests Nominations

Dr. Peter R. Girardot, Pittsburgh Plate Glass Co., Chemical Div., P.O. Box 31, Barberton, Ohio, chairman of the Committee on Honorary Membership, announces that the members of this Committee are: Raymond Stevens, Hon. AIC; Dr. Lincoln T. Work, Hon. AIC, Dr. George F. Rugar, F.A.I.C., and Bernard E. Schaar, Hon. AIC.

The Committee will welcome recommendations for Honorary AIC Membership from AIC members. Please send your nominations directly to the chairman of the Committee.

Chicago Chapter Officers

The Chicago Chapter announces that the following officers will serve for the 1961-62 season:

Chairman, Dr. Eugene Lieber, chairman, Chemistry Department, Roosevelt University, 430 S. Michigan Ave., Chicago, Ill.

Chairman-elect, David W. Young, research Associate, Sinclair Laboratories, Harvey, Ill.

Vice-Chairman, Dr. Richard Maguire, research chemist, Armour Research Foundation, 3300 S. Federal St., Chicago, Ill.

Secretary, Miss Helen Selin, research chemist, Griffith Laboratories, Inc., 1415 West 37th Street, Chicago 9, Ill.

Treasurer, Harry J. Pappas, bacteriologist, Griffith Laboratories, Inc., 1415 West 37th St., Chicago 9, Ill.

Representative to National Council, Bernard E. Schaar, M. R. Box 436, Chesterton, Indiana.

New Officers for Beaver Falls Chapter

The officers of the Beaver Falls Chapter for the 1961-62 season are:

Chairman, Dr. William S. Wagner, Fiber Products Research Center, Inc., Beaver Falls, N. Y.

Chairman-elect, Dr. Fred C. Keeney, 255 Mullin St., Watertown, N. Y.

Treasurer, Paul E. LaValley, Fiber Products Research Center, Inc., Beaver Falls, N. Y.

Secretary, George K. Boger, Jr., Fiber Products Research Center, Inc., Beaver Falls, N. Y.

Representative to National Council, Dr. Fritz Rosenthal, Knowlton Brothers, Inc., Watertown, N. Y.

Report from the Committee on Legislation

Drug Industry Antitrust Act, S. 1552

Senator Estes Kefauver (D., Tenn.) has notified the AIC that hearings on his bill, S. 1552, will be held before the Subcommittee on Antitrust and Monopoly, Senate Committee on the Judiciary, during the week of Oct. 16.

President Bjorksten has requested an opportunity to appear before Senator Kefauver's Subcommittee on behalf of the AIC, and it is expected he will present a statement on Oct. 16 or 17. As noted in THE CHEMIST, July 1961, p. 244, this legislation, if enacted, would have a serious impact on the patent system and on industrial research, particularly in the drug industry. Once again, AIC members are urged to express their opinions to their Congressmen or members of the Committee on the Judiciary.

Saline Water Program

AIC members will be interested to note that Congress recently refused to authorize funds for the construction of additional "demonstration plants" for production of fresh water from salt or brackish waters. $75,000,000 was authorized for an expanded research and development program aimed at getting more fundamental data on aqueous solutions, separation processes, etc., which may eventually lead to an economic desalting process.

The administration had requested funds for large-scale (up to 50,000,000 gallons per day) plants on the grounds that they were needed to demonstrate the processes and to gather technological and economic data. A number of chemical engineers, including Dr. D. B. Keyes, F.A.I.C., argued that current technical knowledge concerning desalting processes now in use is such that costs are known or can readily be calculated. Members of the House of Representatives in particular were impressed with the latter arguments and the bill as finally approved by Congress provided only for research funds.

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AT what age do you think chemists attain their greatest productivity in chemistry? This question can best be answered by intuition and experience, which tell us that chemists are not all alike and that they do not follow some specific pattern. The science of chemistry is almost universal and has some bearing on nearly every aspect of life and living. Productivity in chemistry shows itself in many ways, each as important as the other. Knowing these things, why ask the question?

That was my answer when Prof. Harvey C. Lehman of Ohio University published his book, *Age and Achievement*, in 1953. On May 23, 1958, Vol. 127 of *Science*, Prof. Lehman struck again. The article (page 1213) was titled, "The Chemist's Most Creative Years." The subtitle apparently confused creativity with productivity. It said, "The 2500 ablest of the world's chemists attained their maximum production rate at ages 30 through 34." This title has been quoted and the Lehman article misquoted to some extent, in newspapers and journals ever since. The subject comes up at every important discussion of professional chemistry. Lehman's fellow psychologists learnedly remark, "It has been established that chemists rapidly lose their skills after reaching 35 years of age."

What intelligent young man would sacrifice his first 30 years in intensive preparation for an intellectual career doomed to obsolescence at age 35? Do managements need to be informed on the effect of age on the skills and interests of their chemists? What are the facts?

Let us review the Lehman article in *Science* and then go on to our conclusions. It starts out:

> In 1835, just 123 years ago, two great chemists, J. J. Berzelius and J. A. B. Dumas met in Paris. According to Dumas' brother, this meeting was marked by an odd verbal exchange.
>
> Upon entering the room where Dumas was waiting for him, the most illustrious among illustrious chemists took Dumas by the hand and, looking him straight in the eye, said:
>
> "How old are you?" "Thirty-five."
>
> "That's fine! You still have 20 years of profitable research ahead of you. After 55, one does nothing important in the field of chemistry."
>
> What justification did Berzelius have for making this remark?

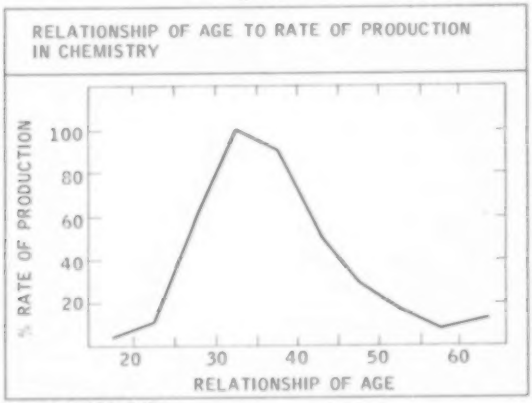
Lehman did not answer his own question. Here is the answer. Berzelius was just 55 at the time, and one of the great theories of his youth was being disproved. Although he went on to a long and useful career, he spent much time in argumentation rather than experiment. His resentment over having his view of younger days questioned by upstarts like Dumas clouded

his future. This is a weakness not limited to chemists.

On the other hand, Dumas published his great works on the atomic weights of the elements at the age of 58 to 60. He had started this work when he was 26. At age 60, Dumas accepted criticism of his early work and made it a basis for his contribution. He went on to become Gay Lussac's successor, and, at age 75, was admitted to the French Academy.

Just what justification did Berzelius have for his remark? Incidentally, how does this prove Prof. Lehman's point? Actually, that was not his intention. He carried out an extensive statistical study. His conclusions are based on facts assembled from surveys of 44 histories of chemistry. He counted the number of times that contributions of deceased chemists, born not less than 70 years prior to publication of each history, were mentioned. The number of times a particular contribution was mentioned was taken as a mathematical measure of the importance of the contribution. Figure 1 shows the average rate of production of 155 "very superior" contributions by 54 chemists. Each contribution was cited in not fewer than 15 of 44 histories of chemistry. Productivity as measured by this standard does fall off with age.

Figure 1



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Why does this fail to agree with our experience as chemists with chemists? There are many explanations:

1. Lehman chose the number of listings in history books as the absolute measure of importance of all contributions. Prolific writers are not necessarily the best chemists. Chemists would be expected to generously

refer to their own work in their writing. Citations in early history books favor repetition. On controversial subjects, the man who is wrong can easily be referred to most often. Lehman's criterion is like saying Alexander the Great was the most important man of his century because he is mentioned most in high school history books.

2. Lehman does not consider the differing objectives of chemists. Chemistry is great because of its industrial applications. It would be absurd to say that, therefore, only industrial contributions are important. However, inventing, selling, producing and managing are important activities of chemists.

3. The chemists he chose to study were not representative of chemists today. They worked with crude tools and much less complicated systems. Today contributions of men under 22 are occasionally mentioned in the public press, but seldom merit publication in an authentic scientific journal. Of his men under study Lehman says,

> The first numeral in row 3 reveals that 25% of the members of group A first published a contribution important enough to be on my master list prior to the age of 21.7.

4. Chemists have not yet agreed upon the branch of chemistry which is most important. They are not likely to do so. Even Dumas is said to have slighted Liebig in his history of chemists. Inorganic chemists place great emphasis on discovery of elements. This is not necessarily the true criterion of greatness in chemistry.

5. It is natural for a chemist to select a specialization by the time he is 35. In the future course of his work it is customary to refer back to earlier work, which may unduly emphasize an early experiment. It should not detract from the value of supporting work done later.

6. A worthwhile study of age and achievement of chemists must relate to living chemists. The year of publication of the Lehman book (1953) coincided with the amazing discoveries of Prof. Ziegler and Prof. Natta on olefine polymerization. Both were in their late 50's during the period of development of their work. If selection of one best contribution were really possible, their work could easily be the outstanding chemical contribution of the past decade.

7. Finally, productivity measured by "greatest contribution" overlooks the most important factor in chemical progress. Advances in chemistry are not separate and instantaneous like a stroke of lightning. Progress is built on combined experience of many chemists. Communication and cooperation are essential for individual productivity in chemistry.

In a meaningful survey, the selection of chemists under study and the criteria for contributions must be unbiased and objective. The best criteria of interest and skills available are citations in *Chemical Abstracts*. The citations are impersonal; the standards are well established. In the selection of names, we have used three approaches.

(1) Presidents of the American Chemical Society from 1901 to 1961.
(2) Random names of ACS members listed in *American Men of Science*.
(3) A list of ACS members born in 1897.

Presidents of the ACS represent a highly motivated group selected by ACS members in democratic elections. The *American Men of Science* groups were picked by opening the book at random. The 112 names happened to begin with "C," and were selected for birth dates falling between 1895-1897 and 1905-1907. The span of years compensated for lag in publication in *Chemical Abstracts*, and the men were assumed to have reached 20 years in 1917 and 1927, respectively. These years correspond to initial years of coverage of decennial author indices. The third list covers chemists born in 1897, as sorted out from ACS membership cards supplied by the Washington staff.

Results on the maintenance of interest and skills in chemistry by Presidents of the ACS are presented in Figure 2. Naturally, the number of chemists falling in each age bracket varied. Citations per man per decade were slightly higher at 40-50, and fell off slightly in the lower or higher age brackets.

Figure 2

Presidents of American Chemical Society 1901-1961

Age	30-35	35-40	40-50	50-60	60-70
Number of Chemists	28	28	37	48	37
Citations	376	464	1461	1480	847
Citations/Chemist/Decade	31		40	31	23

Figure 3

Presidents of American Chemical Society
Sharing Four Age Groups

	30-40	40-50	50-60	60-70
Number of Chemists Sharing 4 Decades	11	11	11	11
Total Citations/Decade for 11 Chemists	287	479	482	296
Citations/Man for 11 Chemists	25	43	44	26
Age of Most Citations for 11 Chemists*	2*	5*	4*	3*

* Ties counted twice. Number reaching peak productivity in decade.

Eleven of the men shared 4 decades of activity. Data on these are given in Figure 3. The average contribution per man reached a plateau

between ages 40-60 and fell off slightly in the 30-40 and 60-70 age brackets. The decade of maximum contributions of individuals justifies the same conclusions.

These are average figures of overall productivity showing uninterrupted interest and skills in chemistry, regardless of age. Specific individuals varied considerably. But these averaged out, since any one factor may either promote or inhibit momentary interest and skills in chemistry. Individual differences are illustrated in Figure 4. Five names were selected from one double page of *American Men of Science*. The number is not significant, but the data indicate that this group would be of interest because the contributions per man were significantly lower than for ACS presidents. This gives the possibility of comparing the highly and less highly motivated groups.

Figure 4

Chemists Listed in American Men of Science
(One Page at Random)

	Citations in C.A./Chemist	
Year of Birth	30-40	40-50
1896	6	8
1900	16	5
1906	10	24
1880	0	1
1890	12	5
Total	44	43

A larger survey of 112 chemists listed in *American Men of Science* is summarized in Figures 5 and 6. Totals show 339, 793, and 928 citations for ages 20-30, 30-40, and 40-50, respectively. Somewhat higher activity was observed in age group 40-50. Figure 6 represents an older age group of 45 chemists. Here, again, citations are slightly higher during the years 40-50 and fall off somewhat in the 30-40 and 50-60 age groups.

Figure 5

Chemists Listed in American Men of Science
Born 1905-1907 (67 Names)

Age	20-30	30-40	40-50
Total Citations	251	466	515
No. of Chemists Reaching Peak in Decade*	7	24	32
Citations/Man/Decade	3.9	7.0	7.6

* Lifetime decade peak.

Figure 6

Chemists Listed in American Men of Science
Born 1895-1897 (45 Names)

Age	20-30	30-40	40-50	50-60
Total Citations	88	327	415	290
No. of Chemists Reaching Peak in Decade*	1	19	17	8
Citations/Man/Decade	2	7.3	9	6.5

* Lifetime decade peak.

Presidents of the ACS average about 5 times the citations of chemists selected at random from *American Men of Science*. The average of each of the two groups remains remarkably constant in the age range 30 to 60. However, both groups might be considered as having exceptional motivation. A random selection of ACS members might show less dedicated chemists with greater tendency to lose interest with age.

The rather surprising results are given in Figure 7. The names of 165 chemists born in 1897 were sorted from the ACS card file by the Washington staff. *Chemical Abstracts* citations reached a slight peak in the age decade 40-50, with a slight falling off at lower and higher ages. The numbers of chemists receiving maximum citations in each of the decades 30-40, 40-50, and 50-60 also showed a slight peak in the 40-50 age range.

Figure 7

165 Members from ACS Files

Age	20-30	30-40	40-50	50-60
Total Citations	150	793	857	580
Citations/Man/Decade	0.9	4.8	5.2	3.5
Age of Most* Citations	19	49	59	34

* Ties counted twice. Lifetime decade peak.

In Figures 8 and 9, the 165 ACS members' names were sorted according to training; 76 members were listed as having Doctor's degrees. The other 89 were not listed as having advanced training. The productivity of Ph.D. chemists remarkably duplicated that of the *American Men of Science* group, both in quantity and in age distribution.

Figure 8

76 Members from ACS Files
(Listed as Ph.D.)

Age	20-30	30-40	40-50	50-60
Total Citations	108	573	545	450
Citations/Man/Decade	1.4	7.5	7.2	6.0

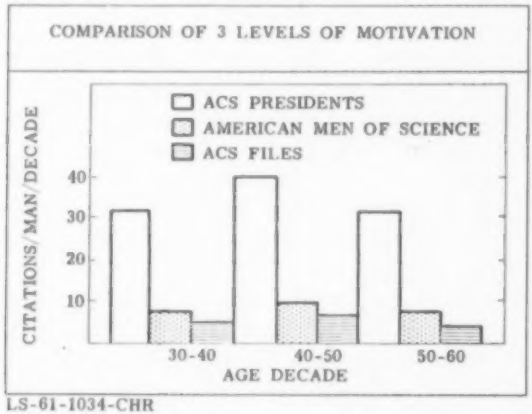
Figure 9

89 Members from ACS Files
(Not Listed as Ph.D.)

Age	20-30	30-40	40-50	50-60
Total Citations	42	220	312	130
Citations/Man/Decade	0.47	2.47	3.5	1.57

The non-Ph.D. chemists had a lower number of citations. This is explained by the fact that over 25% of the group had no citations. These and an equally large group with only one citation per decade brought down the average. It is possible that these men never really got started in this particular aspect of chemistry. Nevertheless the curve for productivity versus age follows all of the others. All of the data are summarized in the chart, Figure 10.

Figure 10



LS-61-1034-CHR

The facts brought out in this survey are:

1. Individual chemists vary greatly in productivity and in their individual response to motivating influences with age.

2. Regardless of degree of motivation, as measured by drive to contribute to the permanent literature of chemistry, average productivity of large groups of chemists remains remarkably constant in the age range of 30-60.

3. Since average productivity remains high and many individual chemists do develop other dominating goals, it appears that the highly dedicated chemists must actually improve their interest and skills in chemistry as they mature in the profession.

We can now conclude that interest and skills of highly motivated chemists do not change greatly with age. There is no inherent biological, physiological, intellectual or environmental aging process among chemists relative to their average contributions to chemistry. Significantly large groups of chemists maintain average productivity through 3 and 4 decades without regard to problems of health and environment. Increasing administrational, social, government, political, consulting, family and community responsibilities do not greatly change the average productivity of large groups of chemists between the ages of 30 and 60. Individual productivity varies greatly in total quantity and also in age distribution. This comes as no surprise to those who have known Charles A. Kraus, Marston T. Bogert, or Wilder D. Bancroft, who averaged 39 citations each for age 70-80.

Having criticized Prof. Lehman's "one best contribution" criterion of productivity, let us look at our own. Is "citations in *Chemical Abstracts*" an adequate measure of a chemist's productivity? Our answer is "No." Here are two examples: Justus Liebig may well be the greatest of the chemists on Lehman's master list. Most chemists would recall that he invented the Liebig condenser (which he did not!). Others might remember that he originated the demonstration lecture or was the first to suggest the use of a commodity index. His real greatness would not be listed in histories of chemistry or in *Chemical Abstracts*. His was a lifetime of inspired teaching. His record places him as the direct academic antecedent of most of the Nobel Prize winners in Chemistry. That is a true measure of his greatness as a chemist.

In Charles H. Herty's entire seventh decade he was cited only twice in *Chemical Abstracts*. The average student of chemical history would date his greatest contribution with World War I (age 50). But 15 years later he initiated, predicted, and brought about the development of the slash pine paper industry in the south. But the true measure of his greatness resided in the enthusiastic and inspiring lecture which he gave on this subject when he was 67. Truly this man proved to us that chemistry can be a rewarding life-time career.

The real facts are that chemists are individuals. Their opportunities to make contributions are many and varied. No one criterion of productivity is adequate for measuring their value to society. Chemistry is an intellectual pursuit. There are opportunities to make contributions as long as any chemist retains his mental faculties. Dr. William A. Owen recently checked the mental ability of 127 men against the Army intelligence scores

they had made in 1919. Their recent scores averaged 70% higher than their old scores. Concludes Dr. Owen: The bright young men are not so bright as they will be when they are bright older men.

The building of chemistry has been like the building of the pyramids. Some men have laid more than one stone. But the total structure is the combined work of hundreds of thousands of chemists. Some have been younger; some have been older. Most have been both. One thing is important—all were chemists.

Dr. Joseph F. Saunders, M.A.-I.C., has been appointed head of the Medicine & Dentistry Branch in the Biological Sciences Division, Office of Naval Research, Washington 25, D.C. He has been with the Office of Naval Research since 1952.

Dr. Harvey A. Neville, F.A.-I.C., provost and vice president of Lehigh University, Bethlehem, Pa., announces that the Alco Foundation has provided the university with a gift of $100,000 for an endowed professorship in metallurgical engineering.

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The Armed Forces Chemical Association, 2025 Eye St., N.W., Washington 6, D.C., has elected the following officers: *President,* Simon Askin, of Heyden Newport Chemical Co., *Honorary President,* Maj. Gen. Marshall Stubbs, chief chemical officer, USA; *vice presidents*: Maj. Gen. Charles E. Loucks, USA Ret.; Col. Robert T. Norman, USAR; Rear Adm. M. P. Hottel, USN Ret.; Donald MacArthur of Koppers Co.; Col. Victor C. Searle, USA, G. M. Glidden of Acme Protection Equipment Co.; W. Ward Jackson of Commercial Solvents Corp., and Robert J. Milano of Millmaster Chemical Corp. **Lt. Col. O. E. Roberts, Jr.,** F.A.I.C., is secretary-treasurer.

The "New Trends in Chemistry" Conference will be held at the Hotel Sheraton Towers, Chicago, Ill., Oct. 11-12. It is sponsored by Armour Research Foundation and *Chemical Engineering* magazine. For information, William Magee, Conference Secretary, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

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Education for Understanding

Dr. Hans B. Jonassen, F.A.I.C.
Professor, Tulane University, New Orleans, La.

(Presented when Prof. Jonassen received the Honor Scroll of the Louisiana AIC Chapter, at New Orleans, La., May 15, 1961.)

IT is indeed a far cry from the deck of a Norwegian merchant ship to a university professor, but in the past twenty years I have made this transition. I am convinced that those experiences as a seagoing man have greatly influenced my years of working with young people, as a teacher, as a research supervisor, and as one to whom, I hope, they come when they need a "guide, counsellor, and friend." Certainly an experience in which it becomes necessary to try to understand and to communicate with people whose language and customs are unfamiliar has an influence which even the most broadening liberal arts education would be hard put to match. Such experiences make it easy to understand the whole man in learning, in communicating, and in making decisions.

The trend in advanced science education is toward a very specialized expertness. This many times leads to a neglect of other factors which tend to relate the expertness to other human aspects. However, such interrelation is necessary to the development of an attitude essential to a respected profession. To achieve an understanding of the necessities of such interrelation, it is important that the student plan his studies carefully. It is no longer possible for a good scientist to be just a scientist; he must be continually widening his horizons to include a variety of other things.

First, it must be assumed that such interrelation can be brought about only if the student has an understanding of the essential features of the scientific discipline. It is here that the science professor has his most important obligation; not only must he present the knowledge available in the particular field, but this knowledge must be offered in such a way that it can be accepted and admired. Moreover, the knowledge must be so presented that it becomes fascinating to the student—so fascinating that he feels impelled to study and investigate on his own. Therefore, the lecturer should at all times demonstrate an enthusiastic approach, and cultivate a stimulating method of delivery.

After the student has accumulated the basic facts, it is important for him to take those courses which will help him to understand the interrelation between the sciences and various other human aspects. He cannot isolate himself in his "ivory tower" of science; he must, as Sophocles said, be able "to see life steadily and see it whole." The first essential is the need for excellence in communication; it is imperative that the student be

well-versed in the English language so that he may explain his results, not only to fellow scientists, but also to laymen, and especially to humanists. Not only is the conventional humanist ignorant of the sciences, but he is as a rule extremely proud of his ignorance. However, in justice to the humanist, might this not be due, at least in part, to the scientist's inability to communicate adequately with the humanist in terms he can grasp?

The increasing number of cultural exchanges which have been promoted during the past few years have emphasized another point which is important to the scientist—the knowledge of one or more foreign languages. On a visit to New Orleans during his recent stay in this country, Prof. Spitzyn, the director of the Institute of Physical Chemistry of the Soviet Academy, was amazed to find that only in one of the several laboratories he had visited in the U. S. had he found somebody who spoke Russian sufficiently to explain to him, even in elementary fashion, the experiments being conducted. Prof. Spitzyn indicated that in every laboratory in his, or any, Institute in the Soviet Union, several graduate students are able to converse fluently in English. Certainly, Prof. Spitzyn, himself, was an excellent example of this emphasis on cultural understanding through a knowledge of the language. During his several days' stay in New Orleans, he consulted his dictionary only once or twice to explain something rather difficult to us.

In order to develop this relationship further, a budding scientist must have a true artist's approach. This may seem a strange thing to say in this so-materialistic world, but things become much more fascinating if one can understand their beauty. There is beauty in state, as found in the diamond crystal—not the beauty in the form of her solitaire ring which the woman admires, but the beauty of the arrangement of the atoms in the crystal. Again, there is beauty in symmetry; the loveliness in symmetry of the electronic arrangement in an atom, certainly something which not only must be scientifically understood but artistically appreciated. This combination of sense and sensitivity makes the subject so much more fascinating.

It is also important that a student have an understanding of, and be able to communicate in, philosophical terms. To illustrate this, one of the basic premises in chemistry and physics is the Heisenberg Uncertainty Principle, certainly a concept which has as much of the aspect of an absolute truth in it as has any other fundamental principle in philosophy.

A knowledge of history and an understanding of its significance in the world is a "must" for the scientist-to-be. The impact of technological

development on the history of the world is a subject which has been extensively explored recently. Certainly the marked advance in German technological service made Hitler's "Blitzkrieg" possible, and it was chiefly by counter-technological technique that the Allies were able to repel the German forces.

A knowledge of the social sciences is also important. Had it not been for the development of science and engineering, "Suburbia" would never have been possible. The decrease in the number of blue collar workers and the corresponding increase in white collar workers, with all the social implications of such transition, is a phenomenon based primarily on the technological developments of science and engineering. The study of economics becomes important, too. What will automation do to our productivity? What effects do new products have on our living standard? How are new nuclear energy sources going to affect the "Haves" and the "Have Nots?"

From these various disciplines the student develops the most important characteristic that a liberal education brings—the need for tolerance: Tolerance not only toward established patterns but especially toward new ideas and concepts. The well-rounded scientist demonstrates a receptive, understanding attitude, which makes him not only a member of the world of science but a participator in all the many phases of the world as a whole. An emphasis on study which shows the inter-relationship between science and other human factors will have a tremendous effect on the professional attitude of the budding scientist. It will give him a more intelligent grasp of the many facets of life about him. It will compel him to take a more effective part in world matters. It will make him more understanding of and more interested in changes which constantly occur. It will make him more tolerant of others and their attitudes. Most important of all, it will help to make the world less of a mystery to all of us . . .

It was my good fortune to come under the influence of some outstanding teachers during my undergraduate days. These professors were able to excite my interests, not only in the field of specialization, but also in other fields, literature and philosophy among them. Approaching their subject matter with an enthusiasm which communicated itself to their students they made a lasting impression and created broadening influences which have helped me greatly in my own professional approach. Prof. J. C. Bailar, my mentor at the University of Illinois, instilled in me similar ideals by his wonderful example. His attitudes and philosophies inspired me to try to emulate him in all the ways so important to a successful

career in university work. The importance he placed on each student as an individual, his interest in each one as a person, have made him a model for my own teaching program.

As a member of the Tulane faculty, my horizons have continued to widen. The administrators of the University encourage in its science department a happy balance of excellent teaching and research, and I have been able to pursue both these interests with cooperation and support. Both faculty and administration soft-pedal the purely "know how" courses, necessary though they are, and stimulate the development of learning which will contribute to the growth of the student as a whole man, not merely a specialist who knows chemistry and little else. Life today is too difficult and complex to be narrowed down to one small field, and we strive to give students as broad an area as possible in which to function.

Like most scientists today, I feel the grave necessity of encouraging qualified young people to enter the field of sciences as a career. For this reason, I consider it an important part of my work to stimulate high school pupils to a greater interest in scientific programs, with the hope that they will come to see, not only the practical value of science, but its never-failing challenge and unending fascination.

The Influence of a True Teacher

Dr. Herbert E. Longenecker, F.A.I.C.
President, Tulane University, New Orleans, La.

(Presented when Dr. Hans B. Jonassen, F.A.I.C., received the Honor Scroll of the Louisiana AIC Chapter, May 15, 1961, in New Orleans, La.)

THERE are various ways in which a man may contribute to the advancement of a profession or of its members. One way is by organizational activity—by direct efforts to enhance the stature of the profession as such, or to increase the financial rewards which its members may realize. Another means, highly important in the more learned professions such as that of chemistry, is by striving to increase the knowledge of the subjects with which members of the profession are concerned.

Perhaps the easiest way to acknowledge the achievements of a college professor is to note his efforts in this direction, in research and publication. It would certainly be easy to recognize Hans B. Jonassen's achievements in research. His bibliography is approaching a total of 100 publications. It seems, however, that the improvement of the professional status of the chemist depends mostly upon the quality of the preparation, and the degree

of inspiration, which is imparted to him in the years of training for practice. In other words, it depends upon the teaching he has received.

In choosing the recipient of any award, it is common procedure to consider what previous recognition has been given to a candidate's work. Among the prior honors that have come to Hans Jonassen, the most meaningful was his selection by the Manufacturing Chemists Association in 1959 as one of the country's "outstanding teachers of undergraduate chemistry who through the years have inspired qualified students to choose careers in science or in science teaching." Five other college faculty members in different parts of the U. S. were similarly honored at that time. One of them had been teaching for 19 years; the others from 28 to 41 years. Hans Jonassen had been a full-time teacher for 13 years, all at Tulane.

His service at Tulane has coincided with the systematic development of the Graduate School, which has probably been the most significant educational advance in the University since World War II. The first Ph.D. degree conferred during this development was in chemistry, in 1947, the year after Dr. Jonassen joined the faculty. Since then the Department of Chemistry has conferred at least twice as many doctorates as any other department in the university. Hans Jonassen has been one of the principal factors in this record of performance, by his classroom instruction, by his direction of dissertations, by his personal counseling and encouragement of students. Universities and industries and government laboratories throughout the country, especially in the South, are far richer for his influence upon people now working there.

We have heard much in universities about a supposed conflict between interest in research and effectiveness in teaching. We do encounter among outstanding professors preference and a special ability for the instruction of advanced students and at times a disdain for teaching undergraduates. At Tulane we hold strongly to the theory that teaching and research are compatible and complementary and that a good investigator is capable of being a good instructor. It is a firm policy that every faculty member teaching graduate students must teach undergraduates as well. Selection and advancement of faculty is predicated on this concept. Hans Jonassen personifies this theory and this policy, not through passive conformity with the pattern, but through his own inclinations and understanding of his role. In fact, one is hard-pressed to identify his most valuable single contribution. Certainly, one of them has been his work with undergraduates and even students just beginning their acquaintance with science.

Yes, it is highly important to conduct original research; certainly, it is essential that we produce Ph.D.'s; but we would have no research, no Ph.D.'s, and no undergraduate majors, without first having interested and inspired freshmen. That is where I think Hans Jonassen's most significant work is done—in supervising these new students, who are fresh on the college campus and often bewildered and uncertain about their future; in encouraging the most competent among them to consider themselves as potential chemists; in the boundless energy and enthusiasm which he communicates to them; in the friendly and steady hand with which he guides them.

Everyone could probably identify a teacher or a small group of teachers who have influenced the direction of our careers. I recall especially the guidance and inspiration that I received from R. Adams Dutcher, now retired from the faculty of Pennsylvania State University, and C. Glen King, former professor of chemistry at the University of Pittsburgh and now executive director of the Nutrition Foundation. I remember the closely personal discussions with others in the profession. The effect of a good teacher is often beyond explanation. It cannot be expressed merely in terms of subject matter covered, of courses completed, of theses written, of degrees received; it is more than that.

Good teaching, like playing musical instruments, involves the application of certain techniques which may be learned and developed; but a great teacher, like a great violinist, achieves superior results not only because he goes through a series of prescribed motions, but because of an indefinable genius which allows him to transcend all techniques and procedures. He puts himself into his performance; his work is not only done by him, it is of him, it is him.

I understand that Dr. Jonassen is a hard taskmaster, that he expects a high level of performance from his students, and that he gets what he expects, not through the force of his demands but through the force of his personality. A dedicated teacher infects his students with a virus that causes an insatiable thirst for knowledge; and satisfying that thirst becomes a pleasant chore.

I have not had the advantage of being a student of Hans Jonassen. But it is not difficult to assess the impact which he has upon those who are so fortunate as to be under his instruction. Any association with him, any conversation, will demonstrate that here is a man whose very acquaintance is a memorable part of experience. You have only to ask him what time it is, and he will answer with an enthusiasm that seems to imply some

significance about the fact that it is now nine o'clock, and makes you feel that you are a better person for knowing it!

Here is an opinion on the subject of college teaching which appeared five years ago in the alumni magazine, *The Tulanian*:

> Why does anyone enter a life of scholarship?
>
> The financial reward is not great. In spite of this, a true scholar is impelled to do that kind of work and would never be completely happy in any other. He has a pressing curiosity which he must constantly strive to satisfy. He also yearns to share his findings with others, so that he publishes scientific or scholarly papers in journals for the information of other researchers and students. Most scholars also wish to help younger people find the answers to their questions. So they become teachers.
>
> If there were not many thousands of men and women who value the things I have mentioned, there would be no universities, and few schools beyond the most elementary. In fact, there would be no modern civilization. Just about every important invention and scientific advance since neolithic times has either been the direct result of someone's desire to satisfy his curiosity, or has been based ultimately upon knowledge acquired only for that purpose.

That quotation is from an article entitled, "Why I Prefer Tulane," by a curious scientist and teacher named Hans B. Jonassen.

(For the citation on the Honor Scroll to Dr. Jonassen, see page 383).

Dr. Carl E. Barnes, F.A.I.C., recently joined FMC Corporation, 161 E. 42nd St., New York 17, N. Y., as vice president for research. He directs the research, development, and patent activities of FMC's chemical divisions.

Dr. Robert C. Swain, F.A.I.C., director general of Cyanamid International announces that American Cyanamid Company's new melamine plant in Gosport, England, has gone on stream.

Dr. Frank J. Steele, F.A.I.C., chief pharmacist at Greenwich Hospital, Greenwich, Conn., is instructor in chemistry at Greenwich High School, night school.

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Chemical Engineer, Grade 11 & 12 ($7,560 - 8,955). Process engineer to make studies of feasibility for large scale processing and design of specialized equipment. Act as project officer on contracts with commercial, educational and other federal agencies for research and development studies. **Chemical Engineer,** Grade 11 ($7,560). To perform research on engineering drying and milling programs. Evaluate methods regarding specific crystalline structures during the freezing of material prior to freeze-drying. Evaluate methods of classifying micron and submicron sized particles resulting from drying or milling operations. **Chemical Engineer,** Grade 9 ($6,435). Process engineer to translate laboratory process information into processes, plans, specifications, procedures and other engineering design requirements; perform staff studies on methods, equipment, procedures, and necessary materials. **Chemical Engineer,** Grade 9. To study and investigate design, construction, modification of equipment for fermentation, concentration, drying, etc. Conduct experiments and investigations in areas of fermentation, concentration, purification and preservation processes. Contact U. S. Army Chemical Corps, Biological Laboratories, Fort Detrick, Frederick, Md.

Home Economist (female). To answer reader mail, write reports and do editorial work, must be interested in housekeeping problems. Salary $85 plus. **College graduate, Home Economics,** Textile experience required, as laboratory quality control, fashions and design, or teaching textile subjects. To conduct investigations, compile and coordinate data and to produce editorial material based on laboratory and industry investigations. Salary $105. **Chemist,** experienced in food analysis, or soaps and detergents. Salary $100. Take typed resume, Hearst Magazines, Personnel Office, 309 West 56th St., New York 19, N. Y.

Chemist (analytical) and **Physical Metallurgist,** both GS-9 grade at $6,435 per annum. Contact A. H. Slusser, Jr. Industrial Relations Office, U. S. Naval Air Station, Quonset Point, R. I.

The National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass. will hold its Fall Conference at the Hotel President, Kansas City, Mo., Oct. 30-Nov. 1.

Undergraduate Research at Alabama A & M College

Dr. Vandon E. White, M.A.I.C.
Head, Department of Chemistry, Alabama A & M College, Normal, Ala.

(The author writes, "We believe that our program has been a success and we would like chemists and industry to become aware of our research activities.")

THE Chemistry Department at Alabama Agricultural & Mechanical College initiated a new chemistry curriculum in September, 1960. This curriculum has as its aims:

1. The general up-grading of the chemistry students graduating from the college.
2. To provide new and challenging experiences for the honor students, in which they are able to use their initiative and creativity.
3. To help the average student find a challenge beyond that which is normally found in the classroom. (It is the average student who is left out of most of our programs of new and challenging experiences for students.)
4. To help the prospective chemist assume a greater feeling of professionalism.
5. To prepare the student .o go on the job after graduation with a minimum amount of on-the-job training.
6. To create a greater interest and appreciation for chemistry and science in general.

The Department decided that an undergraduate research program could help achieve these aims better than any single plan. With this in mind, the Department designed its curriculum so students would have received sufficient background after the third year of college work to enter into an organized research program. The program was of dual structure, with the aim of serving two specific groups of students: Those students who had demonstrated superior ability in chemistry were selected to work with a senior faculty member on a problem already under investigation by the professor. The second group of students for which the program was designed was the average student. The greater number of students majoring in chemistry are of average or a little above average performers. Of this group only those students demonstrating a high degree of originality and initiative conducted laboratory investigation.

The laboratory investigation for the honor students was intended to acquaint the potential graduate student or professional chemist with the fundamental principles of research. They were given an opportunity to apply the principles learned to solve new and unfamiliar problems. The average student had to conduct a library investigation and prepare a written report on this investigation. They also helped prepare compounds for the support of projects in the departmental research program. This program has created a greater interest in chemistry on the part of the

participants and has increased the research productivity of the department.

More than half of the graduating seniors in June entered graduate schools. They have been awarded scholarships and assistantships. This represents a great increase in the number of our college graduates who enter graduate schools. Many of the average or above average students in the lower division of the college were interested in improving their work in order to qualify to participate in the research program as research assistants to a professor.

From this outcome of the first year of the program, we believe that the undergraduate research program is the best single approach to achieve the aims we have set up for the chemistry department. It not only creates a greater interest in chemistry and produces a better prepared graduate, but it encourages the students in the lower division of the college to develop their potentials. The department plans to seek support from industry in this area to continue and expand the program. The department has one project that is contract research, and it has several proposals under consideration by various institutions interested in basic research. Rohm & Haas Chemical Co., Redstone, Ala., has provided tremendous aid to the research program, and employees of the company have served as consultants in its development and direction. It is our belief that any research program must have the understanding and interest of industrial organizations in the community, if it is to serve best the larger community.

The National Lubricating Grease Institute, Kansas City 12, Mo., will hold its 29th Annual Meeting at the Rice Hotel, Houston, Texas, Oct. 29-Nov. 1.

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A Symposium on "High Power Accelerator Applications" will be held, Oct. 13, at the Sheraton-East Hotel, New York, N. Y. from 9 a.m. to 5 p.m. For reservations: Radiation Dynamics, Westbury, N. Y.

The Glycerine Producers' Association, 295 Madison Ave., New York 17, N. Y., announces that the tenth annual Glycerine Research Awards are now offered in two categories: Basic Science Award and Applications Award. Each award carries a $500 stipend. Nominations should be received by November first.

Communications

A Source of Helpful Information

To the Editor:

I have been impressed again with the fact that (THE CHEMIST) is an excellent source of helpful information on professional status, professional problems, the broad picture of research, and related subjects . . .

—Dr. C. H. Fisher, F.A.I.C.
New Orleans, La.

It Is Not Easy To Convince the Public

To the Editor:

I am just a salesman selling equipment, in a few instances to chemical companies. The other day I was cooling my heels in a lobby waiting for the buyer to call me into his office; I picked up the May issue of THE CHEMIST and read "Russian Launching of Astronaut Evaluated."

I don't know who Prof. Motz is or what his qualifications are, but how anyone can "evaluate" the hand-fed information that comes out of Russia beats me. Also, I am still puzzled by ". . . the greatest breakthrough in the history of mankind." (I left out *technological.*) When I was a six year old kid I shot a rocket up into the sky—seemed like 18,000 miles—and I remember reading about a man named Goddard who later was shooting rockets some place in Texas, I believe.

So, I can't see how adding a few miles could constitute a great breakthrough and furthermore I would want to read reliable data about the Russian's orbital flight before placing any credence in the reports, skimpy as they are.

—C. W. Williams
Pasadena, Calif.

Wanted: Dealers in Chemical Plants and Used Equipment

To the Editor:

We have for sale a chemical processing plant located on a 10.16 acre site at Severn, N. C. The plant has been used for the acid refining of tall oil. It could be used for other chemical processing.

The plant is located adjacent to the Meherrin River and has a rail siding of the Seaboard Air Line Railroad. The property consists of 4 buildings: 2 are warehouses; a boiler house and mechanic shop, and an office and laboratory. The plant has a current capacity of acid refining of tall oil at the rate of 200-300 tons per month, and has facilities for the splitting of tall oil soaps. There are storage facilities for crude tall oil, acid, solvent, and refined tall oil. The system contains one 3800 gallon jacketed stainless steel acid treating tank and a companion treating tank, both equipped with vertical agitation; also a stainless steel still with monel coils. We would be pleased to submit a detailed list of all equipment available

at the plant.

Please inform us of the names of concerns who deal in the buying and selling of commercial chemical plants, and the names of used equipment dealers who would have a possible interest in purchasing this equipment.

—Joseph W. Ayers, F.A.I.C.
President, J. W. Ayers & Co.
640 *No. 13th St., Easton, Pa.*

Professional Interest

To the AIC:

I am a June 1961 chemistry graduate (B.S.) . . . Upon reading through an issue of your publication, THE CHEMIST, I became interested in the AIC and desire to apply for membership . . .

—Anthony R. Puleo
Providence, R. I.

Article Appreciated

To the Editor:

I would like very much to obtain 10 reprints of the article, "How to Live With Your Job," by Dr. Gerald Gordon, which appeared in the September 1961 issue of THE CHEMIST.

—L. A. Hatch, F.A.I.C.
St. Paul, Minn.

Letter Enjoyed

To the Editor:

We were delighted by Dr. Plodder's letter in the March issue of THE CHEMIST, page 103.

—Emerson Venable, F.A.I.C.
Pittsburgh 32, Pa.

The American Rocket Society is featuring a "Space Flight Report to the Nation" at its meeting at the New York Coliseum, New York, N. Y., Oct. 9-15. For information, American Rocket Society, 500 5th Ave., New York 36, N. Y.

The Annual Trade Fair of the Atomic Industry will be held Nov. 6-9, at the Conrad Hilton Hotel, Chicago, Ill., by the American Nuclear Society and Atomic Industrial Forum. For information: American Nuclear Society, 86 E. Randolph St., Chicago 1, Ill., or Atomic Industrial Forum, 850 3rd Ave., New York 22, N. Y.

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Fitting Non-Conformists into the Team

(Condensation of a release on a talk given by Dr. R. P. Dinsmore, Hon. AIC, before the American Management Association, Mar. 2.)

ANYONE with deep reservoirs of patience and tact, a sound grasp of basic psychology and experience as either a handler of race horses or grand opera divas, can mold nonconforming scientists into a smooth working research team. It also helps if you are something of a miracle worker.

The atmosphere of a research center can range from cold-blooded practicality to "the temperamental atmosphere of a group of grand opera singers." Thus, a nonconformist for one organization might be an entirely acceptable conformist for another.

However, in any research group, some non-conformist types stand out. These and some suggestions for fitting them into the team are:

(1) *The Creative Slowpoke.* Long incubation periods will precede every major advance he makes. Ask him for an outline of the problem. Marshalling facts in an outline often acts as a spur to the subconscious mind. Or assign him more than one project at a time. He may find the answer to one problem while working on another, in the same way that people can't think of a name while wracking their memories but may think of it the minute they turn their attention elsewhere.

(2) *The Lone Scientist.* Let him work alone if he is genuinely unhappy in a group. Require only that he be on call to report any progress on his work and to listen to any specific needs that affect it. Explain, however, that he is welcome to participate in all group interchange if he wants to. Many loners eventually find that they profit by group activity.

(3) *The Uncontrollably Curious.* Lead the scientist who simply must go down any bypath he encounters, to the detriment of the main job, to view his employer as a client he and his colleagues have persuaded to spend money for a certain project. Help him to see that to divert money appropriated for that purpose to an unauthorized project is entirely unethical. Discuss his bypath ideas with him and ask him to record them carefully for later investigation.

(4) *The Temperamental Scientist or the Regulation Resistor.* This subject should be approached with caution, because "while I have heard competent horsetrainers quoted as saying there is absolutely no reason why a race horse should be temperamental and that with proper training it is not, yet I am well aware that most race horses are temperamental." The temperamental scientist who resists conforming to any regulations, whether they be hours, reports, program planning, or what not, is basically

objecting to discipline. If he is creative and has an otherwise genuinely professional attitude toward his work, free him as far as possible from irksome regulations. Avoid both extreme regulation and extreme laxity.

(5) *The Passive Resistor.* The scientist who agrees with all supervisional plans and then ignores them to do exactly as he likes is perhaps the most exasperating nonconformist of all. Require from him adequate progress reports and give strict warning if they are not forthcoming. If the fault is not corrected after a reasonable exercise of patience, get rid of him. He is a professional hypocrite and tends to infect others who associate with him.

All people are variable in their approaches to daily problems and the research worker is no different in this respect—he is just a little more original in his approach. Effective utilization of creative people requires a nice balance between protecting them from the daily frictions and pressures of industry and exposing them to the objectives of management.

If this sounds as though a research director must be something of a miracle worker, my only excuse is that is about what he has to be.

Dr. Foster D. Snell, Hon. AIC, announces that Foster D. Snell, Inc., New York 11, N. Y., has appointed the U. S.-Asiatic Co., Tokyo, as representative in Japan for its publications, *Chemical Market Abstracts, Polymer Market Abstracts,* and *The Common Chemical Market.* . . . William E. Chesney has been appointed director of laboratories for the Baltimore Labs Division, Baltimore, Md., formerly known as Crippen Labs. Division. Foster D. Snell, Inc., has also purchased the physical assets of American Scientific Supply, Inc., of Long Island City, N. Y., solely for use of its inventory supplies.

American Alcolac Corporation, Baltimore, Md., has changed its name to Alcolac Chemical Corporation.

The International Water Conference will be held Oct. 23-25, at the Penn-Sheraton Hotel, Pittsburgh, Pa. The sponsor is the Engineers' Society of Western Pennsylvania, Penn-Sheraton Hotel, Pittsburgh 30, Pennsylvania.

The 1961 Computer Applications Symposium will be held in Chicago, Ill., at the Morrison Hotel, Oct. 25-26. For information: Benjamin Mittman, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

The Fall meeting of the National Society of Professional Engineers will be held at the Hotel Roanoke, Roanoke, Va., Oct. 19-21. For information; write the NSPE at 2029 K St., N.W., Washington 6, D.C.

Peace Corps Is Seeking Engineers

(This article is reprinted from Vol. II, No. 2, of *Engineer*, published by Engineers Joint Council, Inc. Its original title was "Peace Corps Service is Career Help." Its author is Sargent Shriver, Director of the Peace Corps.)

(Of the 7825 eligible volunteers for the Peace Corps in the Spring of 1961, 325 had some engineering college background. *Engineer* asked Sargent Shriver to comment on this and other aspects of the role of engineers in the Peace Corps.)

AS every reader of *Engineer* is aware, there is an unprecedented demand for engineers these days by business firms, civilian agencies of the government, and the armed services. Now the Peace Corps is in the market too.

No Panama Canals or Hoover Dams will be forged from these efforts, but specific, modest projects will go forward in a spirit of joint envolvement that will benefit the world. Rather than "robbing" from the pool of 37,000 engineers who receive their degrees each year, we believe that we are enriching it. We are convinced—and we hope you are—that a young engineer with two years of Peace Corps service under his belt will be more valuable to his country and to his later employers than the young engineer without this specialized background.

He will have handled at the outset of his career such diverse experiences as: working intimately with men of a different culture, learning to accept and discharge authority in his chosen field, and absorbing an intimate knowledge of the country in which he has served.

Let us listen to a young engineer. His name is George Albert Johnson. He is 23 years old. He received his degree in civil engineering from Princeton University, where he was president of the student chapter of the American Society of Civil Engineers. He has completed his Peace Corps training at Texas Western College and is now bound for assignment in Tanganyika as a surveyor in the construction of farm-to-market roads.

He says: "I think we have chosen to join the Peace Corps for a relatively simple reason—we couldn't follow any other course. Each of us is convinced that America is a strong country, a great country. Each of us realizes its strength and greatness and wide responsibility.

"We don't want them to feel economically indebted to America—we want them to feel that America's strength and wealth is best realized by the amount of help we are able to offer. During our service with the Peace Corps, we are going to try our best to deserve the honor of representing America to the nations of the world. We submit that we are not dewy-eyed young zealots, but reasonably mature citizens with a skill to offer others and a sincere conviction that the Peace Corps can be a contributing part of America's leadership to the underdeveloped nations."

If any of you—old or young—feel as Mr. Johnson does, write to us at the Peace Corps, Washington 25, D.C.

Professional Appointments

Oct. 5, 1961. Chicago, Ill. Furniture Club, 667 McClurg Court. Honor Scroll Award Meeting of Chicago Chapter, 7:00 p.m. Honor Recipient, M. H. Arveson, Coordinator of Research, Amoco Chemicals Corp., Chicago.

Oct. 9, 1961. Wilmington, Del. Dinner Meeting, Delaware Chapter. Speaker, W. Victor Higgs, Legal Dept., E. I. du Pont de Nemours & Co. Subject: "The European Common Market."

Oct. 16, 1961. Rome, N. Y. Rome Club. Meeting of the Beaver Falls Chapter. Social hour: 6:00 p.m., dinner, 7:00 p.m., program 8:00 p.m. Speaker, Walter McCrone. Subject: Microscopy. For information: George K. Boger, Chapter Secretary, Beaver Falls, N. Y.

Oct. 17, 1961. New Brunswick, N. J. Vorhees Hall of Rutgers—the State University (George & Hamilton Streets). Meeting of the New Jersey Chapter. 8:00 p.m. Subject: "TV in Science Education." Speakers: Charles W. Vaughan of the National Educational Television & Radio Center, and Walter E. Whitaker, television coordinator at the U. S. Army Signal School, Fort Monmouth, N. J. Discussion period. For information, Dr. Stephen E. Ulrich, Program Chairman of New Jersey AIC Chapter, Rutgers — the State University, New Brunswick, N. J.

Oct. 24, 1961. Atlanta, Georgia. Charter Day Meeting of the Piedmont Chapter. Speaker, Dr. Johan Bjorksten, AIC President. For information: W. I. Wynn, Chapter Secretary, 1960 Westminister Way, N.E., Atlanta 7, Georgia.

Nov. 2, 1961. Philadelphia, Pa. Engineer's Club. Dinner meeting of Philadelphia Chapter. Speaker, Dr. James L. Jezl, Manager, Basic Research, Avisun Corp., who is the present chairman of the Philadelphia ACS Section. Subject, "Basic Research on Polyolefins." For reservations: Dr. Justo B. Bravo, Research & Development Div., Sun Oil Co., Marcus Hook, Pa. Telephone: HU 5-1121, Ext. 627.

Nov. 8, 1961. Los Angeles, Calif. Roger Young Auditorium. Meeting of Western Chapter. Subject: Registration & Licensing of Chemists. For information, George H. Dye, Pennsalt Chemicals Corp., 2700 South Eastern Ave., Los Angeles 22, Calif. Telephone: RA 3-9711, Ext. 29.

Jan. 10, 1962. Los Angeles, Calif. Roger Young Auditorium. Meeting of Western Chapter. Subject: Legal Definition of a Chemist. For information: George H. Dye, Pennsalt Chemicals Corp., 2700 South Eastern Ave., Los Angeles 22, Calif. Telephone: RA 3-9711, Ext. 29.

Feb. 1, 1962. Philadelphia, Pa. Penn Sherwood Hotel. Philadelphia Chapter. Honor Scroll Award Dinner. Recipient to be announced. For reservations: Dr. Justo B. Bravo, Research & Development Div., Sun Oil Co., Marcus Hook, Pa. Telephone: HU 5-1121, Ext. 627.

Mar. 14, 1962. Los Angeles, Calif. Roger Young Auditorium. Meeting of Western Chapter. Subject: Labor Unions for Chemists. For information: George H. Dye, Pennsalt Chemicals Corp., 2700 South Eastern Ave., Los Angeles 22, Calif. Telephone: RA 3-9711, Ext. 29.

April 5, 1962. Philadelphia, Pa. Engineer's Club. Dinner Meeting of Philadelphia Chapter. For reservations: Dr. Justo B. Bravo, Research & Development Div., Sun Oil Co., Marcus Hook, Pa. Telephone: HU 5-1121, Ext. 627.

May 3, 1962. Valley Forge, Pa. Tally-Ho Motel-Hotel, on Route 202. Meeting of Philadelphia Chapter. Student Award Dinner. Speaker, Dr. Charles C. Price, Director, John Harrison Lab., University of Pennsylvania. Teachers and parents of awardees invited. For reservations, Dr. Justo B. Bravo, Research & Development Div., Sun Oil Co., Marcus Hook, Pa. Telephone: HU 5-1121, Ext. 627.

May 9, 1962. Los Angeles, Calif. Roger Young Auditorium. Meeting of Western Chapter. Student Awards will be presented. For information, George H. Dye, Pennsalt Chemicals Corp., 2700 South Eastern Ave., Los Angeles 22, Calif. Telephone: RA 3-9711, Ext. 29.

May 10-11, 1962. Chicago, Ill. Edgewater Beach Hotel. 39 Annual AIC Meeting. The Chicago Chapter will be our host. H. F. Schwarz, Sherwin-Williams Co., 116th St. & Champlain Ave., Chicago 28, Ill., is chairman of the General Arrangements Committee.

Louisiana Chapter Honors Hans Jonassen

The Louisiana Chapter of THE AMERICAN INSTITUTE OF CHEMISTS presented its 1961 Honor Scroll to Dr. Hans Boegh Jonassen, professor of chemistry, Tulane University, New Orleans, La., at a meeting held at the Tulane University Student Center, May 15.

The chairman of the Chapter, Mack F. Stansbury, presided. Dr. Herbert E. Longenecker, president, Tulane University, made the presentation address. Dr. Jonassen accepted the award with an address on "Education for Understanding." (These papers appear in this issue of THE CHEMIST.)

At this meeting, student medals for merit were presented to college seniors in the Chapter's area. Prof. H. R. Jolley, S.J., of Loyola University, New Orleans 18, La., chairman of the Student Awards Committee, presented these medals to Charles L. Guyton of Mississippi State University; Jimmie Hodgeson of Louisiana State University; Lillian Eccles of Newcomb College; Carolyn St. Amant of St. Mary's Dominican College, and Jerry Sherle of Loyola University of the South.

The citation on the Honor Scroll reads:

To Dr. Hans Boegh Jonassen

For his influence on chemistry as a profession and on students of chemistry in the southern area.

Rensselaer Polytechnic Institute and the Watervliet Arsenal are sponsoring a conference, covering recent research in the field of materials science, to be held at Rensselaer Polytechnic Institute, Troy, N. Y., Dec. 18-19.

Air Products, Inc., has changed its name to Air Products & Chemicals, Inc. Its general office is at Allentown, Pennsylvania.

The Annual Convention of the American Documentation Institute will be held at the Somerset Hotel, Boston, Mass., Nov. 6-8. For information, P. D. Vachon, Literature Physicist, Melpar, Inc., Applied Science Div., 11 Galen St., Watertown 72, Mass.

The 39th Annual meeting of the Federation of Societies for Paint Technology will be held at the Shoreham Hotel, Washington, D.C., Nov. 2-4. The address of the Federation is 121 South Broad St., Philadelphia 7, Pa.

The National Association of Corrosion Engineers, 1061 M. & M. Bldg., Houston 2, Texas, will hold a South Central Regional Conference & Exhibition at Houston, Oct. 24-26; a Northeast Regional Conference in New York, N. Y., Oct. 30-Nov. 2, and a Southeast Regional Conference in Miami, Florida, Nov. 27-Dec. 1.

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American Day in Bordeaux

The American Section of the Societe de Chimie Industrielle will host an "American Day Program" at the Faculte des Sciences de Bordeaux, at Bordeaux, France, Oct. 3. Dr. Fred J. Emmerich, Hon. AIC, is honorary chairman, and Dr. Lawrence Flett, Hon. AIC, is chairman, of the meeting. Speakers include Dr. Flett, "Opening Remarks"; Dr. Emmerich, "Financing Corporate Growth"; Dr. Richard L. Kenyon, F.A.I.C., "Better Communications for Technology-Based Industries"; Paul B. Slawter, Jr., M.A.I.C., "Corporate Images"; Prof. W. George Parks, Hon. AIC, "Fire Resistant Fabrics"; Hillary Robinette, Jr., F.A.I.C., "Better Textiles of Blended Fibres," and Roger Williams, Jr., F.A.I.C., "Use of Market Data from U.S.A. to Predict European Markets." George L. Parkhurst, F.A.I.C., will give the Plenary Address on "Petrochemicals." J. Peter Grace will address the luncheon, on "The Pan American Chemical Economy." M. Paul Toinet is president of the Societe de Chimie Industrielle. Arthur L. Glasebrook is president of the American Section, and Dr. Flett is its president-elect.

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"Helping Business Help Itself." Booklet about the management consultant. Free from Director of Information Services, Profit Counselors, Inc., 355 Lexington Ave., New York 17, N. Y.

"Directory, American Council of Independent Laboratories, Inc." Available to industrial and government executives when requested on company or official letterhead from Executive Secretary of the ACIL, 4302 East-West Highway, Washington 14, D.C.

"Brochure Describing Benefits of Aptitude testing of salesmen, engineers, etc." Request free copy on company letterhead from The Sales Aptitude Testing Corp., 315 5th Ave., New York 16, N. Y.

"A Great Age for Science" by Warren Weaver. One of the 16 essays prepared for the Commission on National Goals. Query the Alfred P. Sloan Foundation, 630 5th Ave., New York 20, N. Y.

"School-Industry Cooperation for Better Science Education in N. J." Single copies free from: School-Industry Science Program, State of N. J. Department of Education, 175 West State St., Trenton 25, N. J.

"Industry Believes." Policy. Request from National Association of Manufacturers, 2 E. 48th St., New York 17, N. Y.

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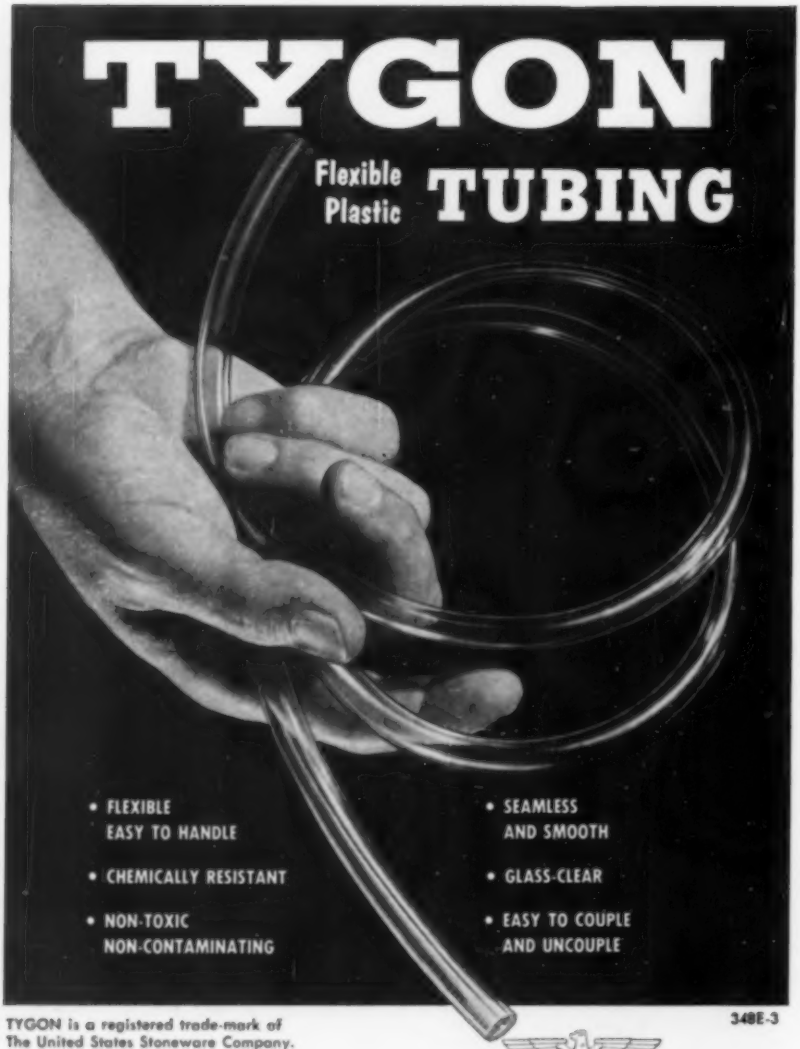

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